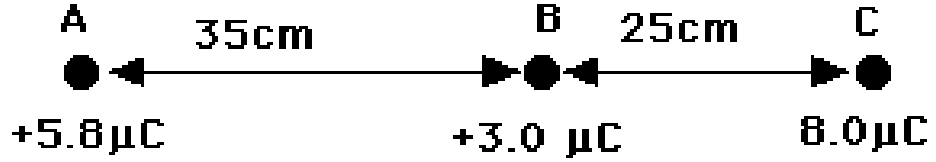
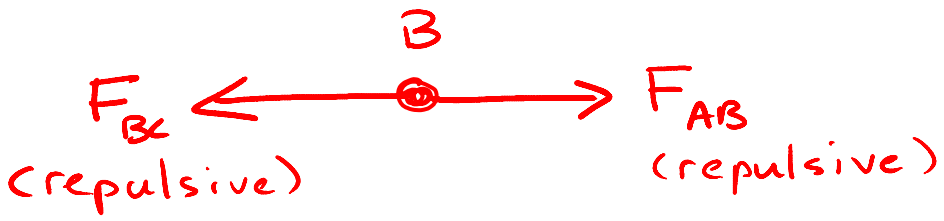
Example 3. What is the force on the 3.0 μC charge if the charges are positioned along one line as follows.



start with f.b.d. on "B":



$$F_{AB} = \frac{(9\times10^{9})(5.8\times10^{-6})(3.0\times10^{-6})}{.35^{2}}$$

$$= 1.28\ N \longrightarrow$$

$$F_{BC} = \frac{(9\times10^{9})(3.0\times10^{-6})(8.0\times10^{-6})}{.25^{2}}$$

$$= 3.46\ N \longleftarrow$$

From analysis of f.b.d.:

$$F_{Net} = F_{BC} - F_{AB} = 3.46 - 1.28$$

$$F_{Net} = 2.2\ N \text{ to the left}$$